

REMARKSIN THE SPECIFICATION:

Applicants have amended the Specification in order to correct several grammatical errors in spelling, punctuation, and syntax.

At page 1, in original line 29, a second period ending the sentence is DELETED to correct punctuation.

At page 4, in original line 2, AFTER the number "112" and BEFORE the word "may" a hyphen and the number -- 115 -- are ADDED. The change is made to accurately describe the situation wherein the channels are filled with a solid material. Support is found at page 3, line 29 of the Applicants' written description.

At page 5, in original line 23, the comma AFTER the words "process channels" is DELETED to correct punctuation.

At page 6, in original line 27, the words "of the" AFTER the words "promote a better" are DELETED to correct the syntax and grammar of the sentence.

At page 8, in original line 3, the word "illustrates" is DELETED and REPLACED with the singular form of the word -- illustrate -- to correct the syntax and grammar of the sentence; in original lines 7, 8, and 10 the word "FIGURE" is amended into its plural form as -- FIGURES --, to correct syntax and grammar; and in original line 23, a comma is ADDED AFTER the words "In general" to correct punctuation.

At page 15, in original lines 22, 25, and 28 and at page 16, in original lines 1, 3, 5, 7, and 9, the word "illustrates" is DELETED and REPLACED with the singular form of the word -- illustrate -- to correct the syntax and grammar of the sentence.

At page 17, in original line 14, the word "cross section" are amended to their hyphenated form -- cross-section -- to correct the spelling of this word.

At page 18, in original line 17, the word "it" AFTER the words "planar substrate" is DELETED to correct the syntax and grammar of the sentence.

At page 19, in original line 8, the comma AFTER the words "transport along" is DELETED to correct punctuation.

At page 20, in original line 13, a comma is ADDED AFTER the words "Laplace equation" to correct punctuation.

At page 21, original line 13, the word "is" is DELETED and REPLACED with the plural form of the word -- are -- in order to correct the syntax of the sentence; and in original line 20, the comma AFTER the words "these restrictions" is DELETED to correct the syntax and punctuation of the sentence.

At page 22, at original line 4, the word -- of -- is ADDED AFTER the word "series" and BEFORE the word "steps" to correct the syntax of the sentence.

At page 24, in original line 24, a comma is ADDED AFTER the number "201" to correct punctuation.

At page 25, in original line 8, the word "FIGURE" is amended into its plural form to read as -- FIGURES --, to correct syntax and grammar of the sentence.

At page 26, in original line 18, the comma AFTER the word "process" is DELETED to correct the punctuation of the sentence; the word "FIGURE" is amended into its plural form to read as -- FIGURES --, to correct syntax and grammar of the sentence; and the comma AFTER the number and letter "6P" is DELETED to correct the punctuation of the sentence.

At page 29, in original line 29, the word "FIGURE" is amended into its plural form to read as -- FIGURES --, to correct syntax and grammar of the sentence.

At page 30, in original line 3, the word "FIGURE" is amended into its plural form to read as -- FIGURES --, to correct syntax and grammar of the sentence; in line 15, the word "filed" is DELETED and REPLACED with the correctly spelled word -- field --; in line 24, the "of" AFTER the word "transport" is DELETED to correct sentence syntax; and in original line 30, the word "FIGURE" is amended into its plural form to read as -- FIGURES --.

At page 31, in original line 12, a comma is ADDED AFTER the word "shown" to correct the punctuation of the sentence; and in line 16, the period ending the sentence with the word "applied" is DELETED and the capitalized word "So" is amended to its un-capitalized form --so-- to correct the syntax, grammar and punctuation of the sentence.

At page 33, in original line 10, the word “show” is DELETED and REPLACED with word -- shown -- to conform the spelling of the word with its intended usage.

At page 35 in original lines 9 and 10, the words “two dimensional” and “three dimensional” respectively, are amended to their hyphenated forms -- two-dimensional -- and -- two-dimensional --, respectively, to correct the spelling of these words.

At page 36, in original line 6, the word “materials” is amended into its singular form to read as -- material --, to correct syntax and grammar of the sentence.

Applicants assert that no new matter has been included as the result of the foregoing amendments.

IN THE CLAIMS:

Applicants have canceled original claims 2, 3, 10 – 13, and 29 – 41, and amended original claims 1, 4, 5, 8, 9, 14 – 17, 22, 26, and 28 to better claim their invention.

IN CLAIM 1

In original line 3 of the claim, the word “providing” is DELETED and REPLACED with the word

-- forming --; the word “formed” is DELETED. The changes are made to more explicitly claim the invention. Support for “forming” is found in the deleted word “form”.

In line original line 4 of the claim, the word “transport” is DELETED for consistency throughout the remainder of the claims; the word “lying” BEFORE the words “in a common plane” is DELETED and REPLACED with the phrase:

-- , wherein each of said channels has a first end contiguous with said junction and a second end opposite said first end, wherein each of said channels lie --

in order to better describe the invention. Support for “a first end contiguous with said junction” is found in original line 5 of the current claim. Support for “a second end opposite said first end” is found in any of Figures 1 – 19.

In original lines 4 through 6 of the claim, the phrase “said channels having first and second ends, said channel first ends contiguous with said junction” is DELETED. The change is made to better recite the claim by re-writing the limitations elsewhere.

In original line 6 of the claim, the word “said” BEFORE the word “first” is DELETED at the suggestion of the Examiner. A comma and the word -- wherein -- are ADDED BEFORE the word “first”; the word -- are -- BEFORE the word “substantially” is ADDED; a comma is ADDED AFTER the word “co-linear” and the words -- and disposed -- are ADDED BEFORE the words “along a”. The changes are made to better claim the invention by improving the grammar of the clause.

In original line 7 of the claim, the word -- and -- is ADDED BEFORE the word “wherein” and the word “said” AFTER the word “wherein” is DELETED. The former change is made to improve the syntax of the clause while the latter change is made at the Examiner’s suggestion in order to remove indefiniteness due to lack of antecedence;

In original line 10 of the claim, AFTER the word and comma “medium,” the phrase:
 -- wherein said channels and said junction are all in communication with each other, and wherein said transport medium filling said third channel comprises a quantity of a sample material comprising one or more species; --

in order to clarify the parts of the system that are to be “filled” and with what they are to be filled. Support is found in the inherency of original claim 1, and at page 3, lines 25 – 30 and in the inherency at page 4, lines 5 and 23 of the written description.

In original lines 11 and 12, the clause:

“c.) inserting a band of a sample material into a region near said first channel first end, said material comprising one or more species; and”

is DELETED as indefinite and not properly descriptive of the method. The limitations of the clause are re-written into subsequent parts of the claim.

In original line 13 of the claim, the clause number “d.)” is DELETED and amended to -- c.) -- to account for the deletion of original clause c.); AFTER the word “applying” the word - - first - - is ADDED to distinguish between multiple electric fields; and the words “each of” AFTER the word “along” are DELETED and the words -- third and fourth -- are ADDED AFTER the word “said” and BEFORE the word “channels” in order to clarify which channels are subjected to the “first electric fields”. Support is found in the written specification in FIGs. 5A – 5C and at page 7, lines 3 – 15, and page 23, lines 18 – 27.

In original line 14 of the claim, AFTER the words “induce transport of” the words -- some of -- are ADDED, and AFTER the article “said” the word “species” is DELETED and REPLACED with the first phase, two new clauses, and the second phase:

-- sample material along said third channel and into said fourth channel and filling a region of said first and second channels adjacent to said junction with portions of said sample material;

d.) removing said first electric fields;

e.) applying second electric fields along said second, third, and fourth channels thereby transporting a portion of said sample material out of said junction and said second channel first end and into said third and fourth channels, wherein a band of said sample material remains in said first channel first end proximate said junction;

f.) removing said second electric fields;

g.) applying third electric fields along said first, second, third and fourth channels wherein said sample band in said first channel first end is transported into said junction, --

Support is found in original claims 10 – 12, now canceled, at pages 7 and 8, and pages 23, line 18 – page 25, line 27, and in FIGs. 5A – 5J.

In original line 16 of the claim, the words “such that” are DELETED and REPLACED with the words – wherein end -- in order to remove a source of indefiniteness and to enumerate various portions of the sample band; the word -- sample -- is ADDED BEFORE the word “band” to provide proper descriptive support; the word “channels” is amended to its singular form and the words -- first ends -- are ADDED AFTER the amended word “channel”.

In original line 17 of the claim, the word -- sample -- is ADDED BEFORE the word “band” to provide proper descriptive support.

In original line 18 of the claim, BEFORE the period ending the sentence a comma and the phrase:

-- , and wherein a center portion of said sample band is disposed in a region proximal to said second channel first end; and
h.) removing said third electric fields. --

is ADDED to clarify how and what parts of the sample band are stretched and it's destination, and to terminate the process by removing the last of the electric fields. Support is found in the drawings in FIGs. 5I – 5L.

CLAIMS 2 AND 3 ARE CANCELED

IN CLAIM 4

In original line 1 of the claim, the dependency is amended to refer to claim 1 in order to account for the cancellation of claim 3. The words -- first, second, and third -- are ADDED BEFORE the words “electric fields” in order to comport this claim with amended claim 1.

IN CLAIM 5

In original line 1 of the claim, the dependency is amended to refer to claim 1 in order to account for the cancellation of claim 3. In original line 2 of the claim, the words -- first, second, and third -- are ADDED BEFORE the words “electric fields” in order to comport this claim with amended claim 1.

CLAIM 6 IS UNCHANGED

IN CLAIM 7

In original line 2 of the claim, the words -- first, second, and third -- are ADDED BEFORE the words “electric fields” in order to comport this claim with amended claim 1.

IN CLAIM 8

In original line 2 of the claim, the words -- wherein each of -- are ADDED BEFORE the words "said reservoirs"; and the words "each containing" AFTER the words "said reservoirs" are DELETED and REPLACED with the word -- include --. The change is made to comport the claim with amended claim 1, improve the syntax of the sentence and to remove a source of indefiniteness.

IN CLAIM 9

In original line 1 of the claim, AFTER the word "applying" the words -- third electric fields-- are ADDED; and the phrase:

"is performed such that said electric fields along said third and fourth channels are the same, resulting thereby in"

is DELETED and REPLACED with the word -- produces -- in line 3 to make it clarify the claim, comport it with amended claim 1, and to better describe the invention. Support is found in the drawings at FIGs. 5I – 5L and in the written description at page 29, line 20.

In original line 4 of the claim, the words "such as" are DELETED and REPLACED with the word -- wherein --. The change is made at to remove a source of indefiniteness.

CLAIMS 10 – 13 ARE CANCELED

IN CLAIM 14

In original line 1 of the claim, the word -- fourth -- is ADDED AFTER the word "applying" and BEFORE the words "electric fields" in order to distinguish these fields from the prior three fields recited in claim 1.

In original line 2 of the claim, the words "such as" are DELETED and REPLACED with the comma and word -- , wherein --. The change is made at to remove a source of indefiniteness.

In original line 3 of the claim, the indefinite article "a" is DELETED and REPLACED with the definite article -- said --, at the Examiner's suggestion; and the word "and" BEFORE the word "across" is DELETED. The changes are made to improve the syntax and grammar and to establish proper antecedence in the sentence.

In original line 4 of the claim, the words "such as" are DELETED and REPLACED with the comma and word -- , wherein --. The change is made at to remove a source of indefiniteness.

IN CLAIM 15

In original line 2 of the claim, the word -- fourth -- is ADDED BEFORE the words “electric fields” in order to distinguish these fields from the prior three fields recited in claim 1.

In original line 3 of the claim, the words “such as” are DELETED and REPLACED with the comma and word -- , wherein --. The change is made at to remove a source of indefiniteness.

In original line 4 of the claim, the words “upon” is DELETED and REPLACED with the word -- with --. The changes are made to improve the syntax and grammar of the sentence.

IN CLAIM 16

In line 2 of the claim, the word “and” BEFORE the word “wherein” is DELETED, and the phrase “said sample band is initially inserted proximal to said first channel first end and wherein further” is DELETED to remove a source of indefiniteness and to comport the claim with amended claim 1.

In original line 3 of the claim, the words “such as” are DELETED and REPLACED with the comma and word -- , wherein --, and the words “proximal to” are DELETED and REPLACED with the word “in”. The change is made at to remove a source of indefiniteness.

In original line 4 of the claim, the words -- first end of said -- are ADDED BEFORE the words “second channel”, and the words “first end” AFTER the words “second channel” are DELETED and REPLACED with the words -- proximate to said junction -- to clarify the claimed invention and to remove a source of indefiniteness.

IN CLAIM 17

In line 1 of the claim, the phrase “said sample band is initially inserted proximal to said first channel first end and wherein further” is DELETED to remove a source of indefiniteness and to comport the claim with amended claim 1.

In original line 3 of the claim, the words “such as” are DELETED and REPLACED with the comma and word -- , wherein --, and the words “proximal to” are DELETED and REPLACED with the word “in”. The change is made at to remove a source of indefiniteness.

In original line 4 of the claim, the words -- first end of said -- are ADDED BEFORE the words “first channel”, and the words “first end” AFTER the words “first channel” are DELETED and REPLACED with the words -- proximate to said junction -- to clarify the claimed invention and to remove a source of indefiniteness.

CLAIMS 18 THROUGH 21 ARE UNCHANGED

IN CLAIM 22

In original line 2 of the claim, the words “primary axis” are DELETED and REPLACED with the words -- common plane --. The change is made to better describe the invention.

Support is found at page 35, line 5 or the written description as well as the inherency at pages 14, line 22 and original claims 22 and 35.

CLAIMS 23 THROUGH 25 ARE UNCHANGED

IN CLAIM 26

In original line 3 of the claim, the word -- wherein -- is ADDED AFTER the word and comma “electrodes,”; in original line 4 of the claim, the word -- electric -- is ADDED BEFORE the word “potentials”; the word “having is DELETED and REPLACED with the word -- comprise --; the semicolon AFTER the word “polarities” is DELETED and REPLACED with a comma; the phrase “by varying each of said potential” is DELETED and REPLACED with the words -- wherein each of said -- ; and the words -- is varied -- are ADDED AFTER the word “polarities” but BEFORE the period ending the sentence. The changes are made to re-phrase the claim as a single step as suggested by the Examiner and to correct the grammar and syntax of the sentence to remove sources of indefiniteness.

CLAIM 27 IS UNCHANGED

IN CLAIM 28

In original line 4 of the claim, the word “transport” BEFORE the word “channels” is DELETED for consistency and to remove a source of indefiniteness throughout the remainder of the claim; the words -- each of -- are ADDED AFTER the comma and BEFORE the words “said channels having” in order to remove a source of indefiniteness by clarifying that “said channels” refer to the prior introduced “at least four” channels.

In original line 5 of the claim, the word “channel” BEFORE the words “first ends” is DELETED and the words -- of said channels -- are ADDED BEFORE the word “contiguous” as suggested by the Examiner in order to remove a source of indefiniteness by clarifying that that the claim refers to the first end of each channel.

In original line 6 of the claim, the word “said” is DELETED and REPLACE with the word -- wherein --; and the verb -- are -- is ADDED AFTER the words “second channels” to correct the syntax and grammar of the sentence.

In original line 7 of the claim, BEFORE the word “wherein” the word -- and -- is ADDED to improve the sentence syntax, and the definite article “said” BEFORE the words “third and fourth” is DELETED to remove a source of indefiniteness as suggested by the Examiner.

-- wherein --; and the verb -- are -- is ADDED AFTER the words "second channels" to correct the syntax and grammar of the sentence.

In original line 10 of the claim, the word "channel" BEFORE the words "second ends" is DELETED and the words -- of said channels -- are ADDED AFTER the words "second ends" as suggested by the Examiner in order to remove a source of indefiniteness.

In original line 16 of the claim, the words "third channel" BEFORE the words "second end" is DELETED and the words -- of said third channels -- are ADDED AFTER the words "second end" as suggested by the Examiner in order to remove a source of indefiniteness.

In original line 17 of the claim, the word "transport" BEFORE the word "channels" is DELETED for consistency and to remove a source of indefiniteness throughout the remainder of the claim.

In original line 18 of the claim, the words -- of some of said sample material -- are ADDED AFTER the words "induce transport" in order to clarify with what is transported into the junction; and the word "the" AFTER the words "junction from" is DELETED and REPLACED with the word -- said -- to improve the grammar of the sentence. The change is made in order to clarify what it is that is transported. Support is found in the inherency of original claim 1, and at page 3, lines 25 – 30 and in the inherency at page 4, lines 5 and 23 of the written description.

In originals lines 19, 22 – 23, and 27 of the claim, the words "such that" are DELETED and REPLACED with the word -- wherein -- [three places] to remove a source of indefiniteness.

In original line 28 of the claim, AFTER the comma the word -- and -- is ADDED BEFORE the word "wherein" to improve the syntax of the sentence.

In original line 29 of the claim, the words "through said junction and" are DELETED and REPLACED with the word -- back -- in order to clarify that the narrowed stream is transported a distance into the third channel. Support is found in FIGs. 8E – 8H.

In original line 31 of the claim, the words -- each of -- are ADDED BEFORE the words "said four channels" to remove a source of indefiniteness as suggest by the Examiner.

In original line 32 of the claim, the words -- of some of said sample material -- are ADDED AFTER the words "induce transport" in order to clarify with what is transported into the junction. The change is made in order to clarify what it is that is transported. Support is found in the inherency of original claim 1, and at page 3, lines 25 – 30 and in the inherency at page 4, lines 5 and 23 of the written description.

In originals line 33 of the claim, the words "such that" are DELETED and REPLACED with the word -- wherein -- to remove a source of indefiniteness.

CLAIMS 29 – 41 ARE CANCELED

Applicants assert that no new matter has been included as the result of the foregoing amendments.

ELECTION/RESTRICTION UNDER 35 U.S.C. §121*Examiner's § 1 – 5*

Examiner has required affirmation of a provisional election of claims 1 – 30 (Group 1) made by the Agent-of-record, Timothy Evans, on September 23, 2003, wherein the election was made without traverse.

Applicants' Response

The Agent-of-record hereby affirms that claims 1 – 30 are elected without traverse and acknowledges that remaining claims 31 – 41 are withdrawn.

Applications' representative requests that the claims to the non-elected invention, claims 31 – 41 be canceled without prejudice.

OBJECTION TO THE DRAWINGS*Examiner's § 6 – 7*

Examiner has objected to Figures 2A- 2H, 3A – 3H, 4A – 4H, 12, 13, and 14 as requiring the designation -- Prior Art -- because they illustrate only that which is old in the art. A proposed drawing correction is required.

Examiner has objected to Figures 1H only the third page of the drawings as being misidentified. The figure should be re-number as -- FIG. 3H -- . A proposed drawing correction is required.

Examiner has objected to Figures 5H in that the reference number "207" is misidentified. The reference number should be changed to -- 207' --. A proposed drawing correction is required.

Applicants' Response

Applicants thank the Examiner for his observations and herein respectfully provide copies of proposed drawing changes in a separate letter as required by MPEP §608.02(r) and (v). Applicants further respectfully provides copies of the proposed drawing changes and copies of CORRECTED drawings which include the identified changes.

OBJECTION TO THE SPECIFICATION*Examiner's § 8*

Examiner objects to the disclosure due to informalities on page 4 at line 2. In particular, Examiner notes that "channel 112" should be changed to -- channels 112 – 115 --. Examiner requires appropriate correction.

Applicants' Response

Applicants thank the Examiner for his observation and have amended their specification as suggested by the Examiner to correct the noted deficiency.

CLAIM OBJECTIONS*Examiner's § 9*

Examiner objects to claims 1, 9, 11, 12, 26, and 30 because of the following informalities:

- a.) In claim 1 at line 17 and 18, "said band" should be changed to -- said sample band -- to maintain consistence throughout the claims.
- b.) In claim 9 at line 1, the term -- electric fields -- or the term -- transport electric fields -- should be included after the limitation "applying".
- c.) In claim 11 at line 1, the term -- said sample band -- should be included after the limitation "inserting".
- d.) In claim 12 at line 1, the term -- said sample band -- should be included after the limitation "inserting".
- e.) In claim 26 at lines 4 and 5, the semicolon ";" should be deleted in order to join the two phrases since the phrases are part of a single step.
- f.) In claim 30 at line 2, the limitation "Applying" should be changed to -- applying --.
- g.) In claim 30 at line 3, a comma -- , -- should be included after the word "second".

Examiner requires appropriate corrections.

Applicants' Response

Applicants thank the Examiner for his observations. Applicants have amended their claims 1, 9, and 26 as suggested by the Examiner and canceled claims 11, 12, and 30 in order to correct the noted deficiency.

REJECTION UNDER 35 U.S.C. §112*Examiner's § 11*

Examiner has rejected claims 1 – 30 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, Examiner notes that with regard to claims 1, 8, 10 – 17, and 28 – 30:

“Claim 1 recites the limitation "said channel first ends" in line 5. There is insufficient antecedent basis for "said channel" (singular) in the claim. It is suggested that the phrase be changed to --said first ends of said channels--. The same applies to dependent claims 2-12 and 14-27.

Claim 1 recites the limitations "said first and second channels" in line 6 and "said third and fourth channels" in line 7. There is insufficient antecedent basis for these limitations in the claim. Although at least four channels have been introduced, specific channels, such as those identified by "first" and "second", have not been identified. It is suggested that the phrases be changed to --first and second channels-- and --third and fourth channels--, respectively, by deleting the word "said" in each phrase. The same applies to dependent claims 2 – 12 and 14 – 27.

Claim 8 recites the limitation "said channel second ends" in line 1. There is insufficient antecedent basis for "said channel" (singular) in the claim. It is suggested that the phrase be changed to -- said second ends of said channels --. The same applies to dependent claims 26 and 27.

Claim 10 is indefinite because the relationship between the sample material and the band of sample material in claim 1 is unclear. In claim 1, the method comprises the step of inserting a band of sample material into a region near the first end of the first channel; in claim 10, the third channel has a supply reservoir containing a quantity of the sample material. Therefore, claim 10 appears to have two different sample materials. It is suggested that claim 10 be amended to clarify that the sample material in the supply reservoir supplied the sample material that is inserted into the first end of the first channel to clarify the purpose of the supply reservoir and the relationship between the sample material band and the sample material in the reservoir.

Claims 11 and 12 are indefinite because they introduce additional electric fields not clearly distinguished from the electric fields applied in claim 1. It is not apparent whether a total of two

or three electric fields are used. It is suggested that identifiers be added to clearly identify the electric fields as three separate electric fields. An example would be to use "applying transport electric fields" in claim 1 and "applying first [or second] inserting electric fields" in claims 11 and 12, so that the electric fields applied in claim 1 are clearly distinguished from the electric fields recited in claims 11 and 12.

Claim 13 recites the limitation "said channel first ends" in line 6. There is insufficient antecedent basis for "said channel" (singular) in the claim. It is suggested that the phrase be changed to -- said first ends of said channels --.

Claim 13 recites the limitations "said first and second channels" in lines 6-7 and "said third and fourth channels" in lines 7-8. There is insufficient antecedent basis for these limitations in the claim. It is suggested that the phrases be changed to -- first and second channels -- and -- third and fourth channels --, respectively.

Claim 13 recites the limitation "said sample material" in lines 19, 22 and 25. There is insufficient antecedent basis for this limitation in the claim. In line 11, the sample is introduced as "a sample", not "a sample material". It is suggested that "said sample material" (lines 19, 22 and 25) be changed to -- said sample -- or that "a sample" (line 11) be changed to -- a sample material --.

Claim 13 recites the limitation "said sample reservoir" in line 19. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the phrase be changed to -- said reservoir means --.

Claim 14 is indefinite because there is not a clear relationship between the step recited in claim 14 and the steps recited in claim 1. In claim 1 at lines 14 – 19, electric fields were applied to transport the sample band from the first end of the first channel towards the second, third and fourth channels such that portions of the sample band enter the third and fourth channels. Claim 14 recites applying electric fields to transport the sample band from a region proximal to the first end of the second channel toward the first end of the first channel, and portions of the sample band enter the third and fourth channels. How and when did the sample band reach a position proximal to the first end of the second channel? Since a final destination of the sample band was never recited in claim 1, it is suggested that claim 1 be amended to identify that the sample band is positioned in a region proximal to said second channel first end, and changing the limitation appearing in line 3 of claim 14 from "a region proximal to said second channel first end" to

-- said region proximal to said second channel first end --. The same applies to dependent claims 15 – 17.

Claim 15 recites the limitation "said electric fields along said first and second channels" in line 2. This limitation is indefinite because it is not clear whether the limitation is referring to the electric fields applied in claim 1 or the electric fields applied in claim 14. Both sets of electric fields are applied over the first and second channels; therefore, it is not clear which step reverses the current. The same applies to dependent claims 16 and 17.

Claims 16 and 17 both recite the limitation "wherein said sample band is initially inserted proximal to said first channel first end" in lines 1 – 2 of each claim. Claim 1 recites a step wherein the sample band is inserted in a region near the first channel first end. The limitation appearing in claim 16 and 17 appears to suggest that the sample band can be inserted an area other than the region near the first channel first end or that multiple insertions can occur. This language is unclear because it either introduces multiple insertions or implies alternative insertion points not suggested by the insertion step of claim 1.

Claim 28 recites the limitation "said channel first ends" in line 5. There is Claim 28 recites the limitation "said channel first ends" in line 5. There is insufficient antecedent basis for "said channel" (singular) in the claim. It is suggested that the phrase be changed to -- said first ends of said channels --.

Claim 28 recites the limitations "said first and second channels" in line 6 and "said third and fourth channels" in line 7. There is insufficient antecedent basis for these limitations in the claim. It is suggested that the phrases be changed to -- first and second channels -- and -- third and fourth channels --, respectively.

Claim 28 recites the limitation "said four channels" in line 31. There is insufficient antecedent basis for this limitation in the claim. The limitation "at least four transport channels" was introduced in lines 3 – 4. Since the actual number of channels is not explicitly recited, it is suggested that the phrase be changed to -- each of said channels --.

Claim 29 recites the limitation "said channel first ends" in line 6. There is insufficient antecedent basis for "said channel" (singular) in the claim. It is suggested that the phrase be changed to -- said first ends of said channels --. The same applies to dependent claim 30.

Claim 29 recites the limitations "said first and second channels" in lines 6-7 and "said third and fourth channels" in lines 7 – 8. There is insufficient antecedent basis for these limitations in the claim. It is suggested that the phrases be changed to -- first and second channels -- and -- third and fourth channels --, respectively. The same applies to dependent claim 30.

Claim 29 recites the limitation "said sample material" in lines 19 and 21. There is insufficient antecedent basis for this limitation in the claim. In line 11, the sample is introduced as "a sample", not "a sample material". It is suggested that "said sample material" (lines 19 and 21) be changed to -- said sample -- or that "a sample" (line 11) be changed to -- a sample material --. The same applies to dependent claim 30.

Claim 29 recites the limitation "said sample reservoir" in claim 19. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the phrase be changed to -- said reservoir means --. The same applies to dependent claim 30.

Claim 29 recites the limitation "said four channels" in line 23. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the phrase be changed to -- each of said channels --. The same applies to dependent claim 30.

Claim 30 recites the limitation "said four channels" in line 2. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the phrase be changed to -- each of said channels --."

Examiner requires appropriate correction.

Applicants' Response

Applicants thank the Examiner for his observations and numerous suggestions. Applicants have amended their claims as the Examiner has suggested or have canceled the claim. In particular, Applicants have respectfully requested cancellation of claims 2, 3, 10 – 13, 29 and 30, and amended claims 1, 8, 14 – 17, and 28 to correct the noted deficiencies.

Applicants have amended claim 1 to remove the indefiniteness pointed out by the Examiner by incorporate the Examiner's suggestion to re-phrase "said channel first ends" and "said channel second ends", and "said first and second channels" and "said third and fourth channels", and by incorporating some or all of the limitations of canceled claims 3, 10 and 11. The amendments also clearly recite the application of at least three electric fields. Applicants have also amended claims 4, 5, and 7 to remove the indefiniteness by clearly reciting the application of at least three electric fields.

Applicants have amended claim 8 to remove the indefiniteness pointed out by the Examiner by incorporate the Examiner's suggestion to re-phrase "said channel second ends".

Applicants have canceled claim 10 to remove the basis for the rejection of this claim but because several of the limitations of this claim are incorporated into amended claim 1 parts (a.) and (b.) of the amended claim have been re-phrased to clarify the placements of the "reservoirs" and the location and make-up of the "sample material".

Applicants have canceled claims 11 – 13, and have therefore removed the basis for the rejection of these claims.

Applicants have amended claims 1 and 14 to remove the indefiniteness pointed out by the Examiner in his rejection of claim 14 by adding the limitation -- fourth -- to the element "electric field" and by reciting final destination of a part of the sample band in new part (g.) of amended claim 1. Moreover, the Examiner's suggestion to re-phrase "a region proximal to said second channel first end" and -- said region proximal to said second channel first end --, has been incorporated into the claim.

Applicants have amended claims 15 to remove the indefiniteness pointed out by the Examiner in his rejection of claim 14 by adding the limitation -- fourth -- to the element "electric field".

Applicants have amended claims 16 and 17 to remove the indefiniteness pointed out by removing the phrase "said sample band is initially inserted proximal to said first channel first end and wherein further" in order to clarify how and where the sample band is manipulated.

Applicants have amended claim 28 to remove the indefiniteness pointed out by the Examiner by incorporate the Examiner's suggestion to re-phrase "said channel" in line 5; "said first and second channels" in line 6; "said third and fourth channels" in line 7; and "said four channels" in line 31.

Applicants have canceled claims 29 and 30, and have therefore removed the basis for the rejection of these claims.

Applicants consequently assert that they have cured the Examiner's rejection under 35 U.S.C. §112 with regard to claims 1, 8, 10 – 17, and 28 – 30 by amending claims 1, 8, 14 – 17, and 28 and by canceling claims 2, 3, 10 – 13, 29 and 30 herein respectfully request the Examiner to reconsider and withdraw his rejection in these claims and pass them to allowance.

REJECTION UNDER 35 U.S.C. §102(a)

Examiner's § 2

The Examiner has rejected claims 1 – 10, 13, 14, 18 – 21, 24, 26, and 27 under 35 U.S.C. §102(a) as anticipated by Ramsey, (US Patent Serial Number 5,858,195).

The Examiner has rejected claims 1 – 7, 9, 18 – 21, and 24 under 35 U.S.C. §102(a) as anticipated by Ermakov, et al., ("Computer Simulations of Electrokinetic Injection Techniques in Microfluidic Devices," *Anal. Chem.* **2000**, v.72, pp. 3512 – 3517).

Applicants' Response

Applicants thank the Examiner for his remarks and respectfully provide the following response.

Applicants have requested that claims 2, 3, 10, 13, 29 and 30 be canceled without prejudice. Applicants have therefore removed the grounds for the rejection in these claims.

Applicants have amended their claims 1, 4, 5, 8, 9, 14 – 17, 22, 26, and 28 to more explicitly describe their invention. In particular, independent claim 1 has been amended to incorporate many of the limitations of claim 10 – 13, now canceled, in order to clearly recite the use of at least three electric fields with which to manipulate a quantity of sample material in the claimed microchannel system. As the Examiner notes in his remarks at paragraph 21, both Ramsey and Ermakov, et al., teach the use of only two electric fields while the instant invention uses at least one additional field to transport the sample band.

Applicants assert, therefore, that their amended claims 1 and 28 are not taught by either Ramsey, ('195) or Ermakov, et al. (2000) since neither disclose providing at least three electric fields with which to transport a sample band in a microfluidic system. Because MPEP §2131 requires that ALL claimed elements are either taught or enabled in the cited reference to sustain a finding of anticipation, and because neither Ramsey nor Ermakov, et al. teach or disclose three or more electric fields as do the amended instant claims the conditions for finding anticipation cannot be sustained. Furthermore, because remaining claims 4, 5, 8, 9, 14 – 17, 22, and 26 ultimately depend from amended claim 1, and because, by definition, dependent claims merely narrow the scope of the independent claim, it is not possible to maintain a finding of anticipation in the dependent claim without also finding anticipation in the independent claim.

Applicants consequently assert that they have overcome the Examiner's rejection under 35 U.S.C. §102(a) with regard to amended independent claims 1, and 28 and to amend claims

4, 5, 8, 9, 14 – 17, 22, and 26 and herein respectfully request the Examiner to reconsider and withdraw his rejection in these claims and pass them to allowance.

REJECTION UNDER 35 U.S.C. §103(a)

Examiner's § 15 – 19

The Examiner has rejected claims 8, 10, 13, and 25 – 27 under 35 U.S.C. §103(a) as being unpatentable over Ermakov, et al., ("Computer Simulations of Electrokinetic Injection Techniques in Microfluidic Devices," *Anal. Chem.* **2000**, v.72, pp. 3512 – 3517).

The Examiner has rejected claims 22, and 23 under 35 U.S.C. §103(a) as being unpatentable over Ermakov, et al., ("Computer Simulations of Electrokinetic Injection Techniques in Microfluidic Devices," *Anal. Chem.* **2000**, v.72, pp. 3512 – 3517) in view of Parce, et al., (U.S. Patent Serial Number 6,080,295).

The Examiner has rejected claims 25 under 35 U.S.C. §103(a) as being unpatentable over Ramsey, (US Patent Serial Number 5,858,195) in view of Soane, et al., (U.S. Patent Serial Number 5,750,015).

Applicants' Response

Applicants again thank the Examiner for his remarks and respectfully provide the following response.

Applicants have requested that claims 10 and 13 be canceled without prejudice. Applicants have therefore removed the grounds for the rejection in these claims.

Applicants have amended their claim 1 and claims 8, 22 and 26, which ultimately depend from claim 1, to more explicitly describe their invention. In particular, independent claim 1 has been amended to incorporate many of the limitations of claim 10 – 13, now canceled, in order to clearly recite the use of at least three electric fields with which to manipulate a quantity of sample material in the claimed microchannel system. As the Examiner notes in his remarks at paragraph 21, both Ramsey and Ermakov, et al., teach the use of only two electric fields while the instant invention uses at least one additional field to transport the sample band.

Applicants assert, therefore, that their amended claim 1 is not taught or suggested by either Ramsey, ('95) or Ermakov, et al. (2000) since neither disclose providing at least three electric fields with which to transport a sample band in a microfluidic system. Because MPEP §2143 requires that ALL claimed elements are either taught or suggested in the cited references in order to sustain a finding of *prima facie* obviousness, and because neither

Ramsey, nor Ermakov, et al. teach or suggest three or more electric fields as do the amended instant claims the conditions for finding obviousness cannot sustained. Therefore, because claims 8, 22, 23 and 25 – 27 ultimately depend from amended claim 1, and because, by definition, dependent claims merely narrow the scope of the independent claim, it is not possible to maintain a finding of obviousness in the dependent claim without also finding obviousness in the independent claim.

Applicants consequently assert that they have overcome the Examiner's rejection under 35 U.S.C. §103(a) with regard to amended independent claim 1, and to original dependent claims 23, 25 and 27 and amended claims 8, 22, and 26 and herein respectfully request the Examiner to reconsider and withdraw his rejection in these claims and pass them to allowance.

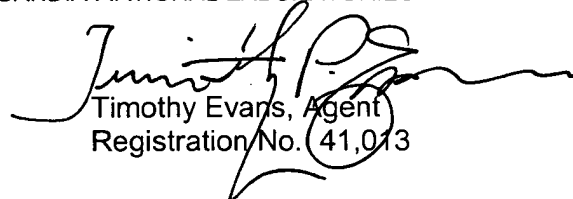
CONCLUSION

In summary, Applicants assert they have cured the rejections under 35 U.S.C. §112, §102 and §103 and have shown that the instant invention claims a unique method that is neither anticipated, suggested nor taught by the prior art. Favorable reconsideration of claims now presented and allowance of this application is earnestly solicited.

This response is therefore:

Respectfully submitted by,

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ATTACHMENTS:

Copy of Transmittal Letter under MPEP §608.02(r) proposing various changes to the drawings
Copies of drawing with proposed changes shown in RED as required by MPEP §608.02(v)
Copies of CORRECTED drawings
Return receipt postcard



Certificate of Mailing Under 37 CFR §1.8

I hereby certify that this Correspondence and documents referred to herein were deposited with the United States Postal Service as first class mail addressed to: Mail Stop Non Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Date of Deposit: 1/16/04

Jenna Madrid
Person Making Deposit

Jenna Madrid
Signature